July 2003

Issue No. 14

Centerline

An Environmental News Quarterly, From the NCDOT Office of Natural Environment

GREAT NEWS!

See page 3 & 4

Viewpoint: The Family of O.N.E.

By: Phil Harris, Manager, Office of Natural Environment
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I can remember it like it was yesterday. Dr. Charles Bruton, Locke Milholland, Linda Hilton-Cain, and myself were sitting in a conference room on the 4th floor of the Highway Building in the Fall of 1999. We were discussing the idea of a newsletter that would serve as a beacon for the Office of Natural Environment (O.N.E.). This newsletter would deliver a message across the state and across the nation about all the significant contributions to North Carolinas' natural resources that were being made by the North Carolina Department of Transportation. With so much good work that was being done and so little extra time to get the message out, this newsletter would make it a priority to the staff of the O.N.E. to share the many environmental success stories. Included in those success stories would be "spotlights" on mitigation projects that were taking place behind the scenes such that the Department could mitigate for its impacts and continue moving forward with the highway program. There would be articles detailing the enormous coordination that takes place between the

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In this issue:

Lyme Disease, the New Arachnophobia

By: Karen M. Lynch, Environmental Specialist, Natural Environment Biological Surveys Unit
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Arachnophobia usually conjures up creepy long-leggy spiders appearing when you least expect them. Besides spiders, another arachnid that we as field biologists frequently encounter (and bring home with us) is the tick. There are several species of ticks that are vectors of disease for humans in NC. Ticks can carry an assortment of diseases, which are passed along to their hosts as they draw blood. As ticks develop from the egg to larva to nymph and adult stages they must take a blood meal from their host to continue development into the next stage. Ticks typically prefer different species of hosts as they morph through each life stage.

The bacterial organism that causes Lyme Disease (the focus of this article), is *Borrellia burgdorferi*, and is carried by the deer tick or black legged tick (*Ixodes scapularis*) in the eastern US. The intermediate host for the deer tick is the white-footed mouse (*Peromyscus leucopus*) which carries and passes on Lyme disease while immature ticks feed upon it. The deer tick is a small insidious arachnid-animal, about the size of a sesame seed.

Lyme Disease is so named because it was first discovered and described in the town of Lyme, Connecticut. Severe arthritis appeared in children who lived in close proximity. Lyme disease was designated a nationally "notifyable" disease in 1991 according to the Center for Disease Control (CDC) in Atlanta.

Lyme Disease appears to be a common disease (in NC) although under-reported in the literature since it is often treated without positive confirmation. The common test for Lyme Disease is unreliable as there are often false positives as well as incorrect negative results. Without reliable tests, doctors do not have adequate data to reliably report this disease to the Center for Disease Control and for statistical records. The majority of victims of Lyme Disease exhibit the characteristic rash (*Erythema migrans*), which helps to identify this otherwise non specific-symptom displaying disease. Various literature illustrates differing percentages of people that display the typical bulls-eye rash (50 - 70%, 80, 90%). The characteristic rash associated with Lyme Disease is a 2 to 3 inch round or oval ring with the tick bite occupying the central position, often described as a "bulls eye".

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(Viewpoint continued from page 1)

Department and state and federal resource agencies during the environmental permitting process. There would be articles discussing the various protected species issues that have to be identified and in some cases, relocated prior to highway construction. It was obvious we had many good stories that would make this newsletter a success. We also wanted to include "guest articles" from the Division Environmental Officer's that would highlight the environmental successes throughout the 14 NCDOT Division Offices. We wanted articles from senior managers in the Department, giving them an opportunity to highlight environmental success stories close to their heart and to discuss important environmental issues that were at the forefront in delivering their programs. In moving forward with this concept and the eventual distribution of the first *Centerline* magazine in April 2000, there was one underlying goal that Charles and the rest of us shared. We wanted to provide opportunities to not only recognize the Department for all its significant environmental contributions, but as important, we wanted to recognize the hard working, dedicated staff within the O.N.E.

Having been part of the *Centerline* magazine since its inception, Charles and I shared a running joke about when I would be fortunate enough to make the "front page" and get the chance to write a "headline" article. Now that I have that opportunity, I have wrestled with several options that would be appropriate to discuss. Some of the first things that come to mind are mussel surveys, writing about project permits to be received through the remainder of 2003, or possibly the close coordination between the NCDOT mitigation program and the emerging Ecosystem Enhancement Program (EEP). After considering all these options for some time, I finally decided to go back to "the roots" of *Centerline* and write about the one thing that I feel I know best. I decided to talk about the hard working people within the O.N.E.

When Charles Bruton was pulling together this highly skilled staff of biologists, environmental scientists, engineers, and botanists, his dream was to build a team of varied expertise that would be widely recognized throughout the Department as the people to turn to for natural environment solutions. Whether you had a question about the Carolina Heelsplitter mussel or had a project in the Neuse River Basin that needed buffer mitigation, Charles wanted to develop a staff that could resolve every natural environmental issue confronted by the Department. Mission accomplished!

I am fortunate to work with four of the most capable Unit Heads that I know: Randy Griffin, Hal Bain, Bruce Ellis, and Randy Turner. To put it into football terms, all these guys are future "Hall of Famers". If you hear about the Department purchasing mitigation property, you can bet Bruce Ellis is going to make sure the item gets on the BOT Agenda in time. Or if a mitigation site is being constructed, you can best believe that Randy Griffin is involved in coordinating this effort so we have a complete and legible set of plan sheets and specifications for the contractors to bid on. Of course, Hal Bain has his eyes on the weather channel to determine whether to send his team to a stream to conduct mussel investigations or to the woods to do a woodpecker survey. Randy Turners' team is constantly coordinating with Project Development as well as navigating through the permit application process to insure highway projects meet their scheduled construction LET dates. These four guys lead by example and are the cornerstones of our program.

I want to thank all the O.N.E. staff that are getting the actual work done. We put huge demands and expectations on you and consistently you rise to meet the challenges. With limited resources and unlimited work to complete, you continue to remain positive and focused. With so many changes occurring around you, you never fail to get your jobs done with a smile. Thank you for everything you do. It is truly my honor and pleasure to work beside you in providing the natural resources expertise to the Department.

With this in mind, I would like to pass along a few things I have noticed since becoming the new Manager of the Office of Natural Environment in early March 2003. First, it is very apparent to me that the staff continues to be devoted to providing all the natural resource needs to the Department. They take great pride in one another and in the work and contributions that they make to the "bigger picture". They truly enjoy working for the NCDOT. Secondly, even though they have undergone several changes over the recent year including moving from the Transportation Building to the Parker Lincoln Building, getting a new Manager, and the evolution of the Ecosystem Enhancement Program, they maintain their focus on projects work and meeting project schedules. The Unit Heads and staff are constantly reprioritizing project tasks and they are very skilled in focusing time and resources towards more important project issues. Finally, I have rediscovered what I already knew to be the case - - this group of biologists and engineers are very close and are great friends away from the office. When one of them has a problem or has to deal with a difficult issue, they pick each other up and move forward together. If they need to talk to a friend, they will pick up the phone and call, day or night, without hesitation. They are always there for one another in good times and in bad. They are a true family!

Before I close, I have to say that the support and direction for the environmental expertise provided by the O.N.E. starts at the top with Secretary Tippett and Deputy Secretary Roger Sheats. It has been their vision, which has been integral in creating a "partnering atmosphere" with the regulatory community, and they have made it known that protecting and preserving the natural environment is one of their top priorities. They continue to move forward with environmental initiatives that the state of North Carolina will benefit from for many years to come. I also want to acknowledge Dr. Greg Thorpe, the Environmental Management Director of the Project Development and Environmental Analysis Branch, as a

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NCDOT Wins Innovation Awards

By: Ehren D. Meister, Policy Analyst and Integration Specialist
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GREAT NEWS!

The National Association of Development Organizations (NADO) has awarded the North Carolina Department of Transportation (NCDOT) with three 2003 Innovation Awards. The three award winning initiatives are:

- The Environmental Permitting Process Improvement Initiative
- The efforts establishing the *Guidance Manual for Assessing Indirect and Cumulative Impacts of Transportation Projects in North Carolina* and the creation of a specialized training course for use of the manual and policy
- The efforts providing Geographic Information Systems support to North Carolina's Regional Planning Organizations

The Environmental Permitting Process Improvement Initiative is a partnership effort between the NC Department of Environment and Natural Resources (NCDENR), the US Army Corps of Engineers – Wilmington District and NCDOT to provide an improved project development and permitting process that delivers needed transportation infrastructure improvements to communities in an efficient manner while protecting the quality of the environment.

The efforts establishing the G*uidance Manual* and specialized training course is a partnership effort between NCDOT, NCDENR and the North Carolina Department of Administration to provide practitioners with a tool to help identify, analyze and assess indirect and cumulative impacts of transportation projects as part of the transportation assessment process.

The efforts providing Geographic Information Systems (GIS) support to North Carolina's Regional Planning Organizations (RPOs) was initiated with the goal to accelerate the effectiveness of RPOs by providing statewide strategic GIS functionality, including infrastructure, software, training, data sharing and rural transit planning.

Since 1986, NADO has recognized organizations that have demonstrated innovative approaches to economic and community development. Each year the projects selected are highlighted in a special issue of the *Economic Development Digest*, which is published in July and distributed to NADO members, federal and state officials, the media, and members of Congress. In 2002, NCDOT won three Innovation Awards for the Ecosystem Enhancement Program, the Air Quality Roundtable and our Rural Planning Organizations.

Members of the "High Quality Resources Team" work on crucial tasks at an environmental permit process improvement meeting in November 2002. This team is listed as critical and meets routinely every 2 weeks. Pictured are (from L-R) Team Leader Dave Henderson (NCDOT), Linda Pearsall (NCDENR), and Cathy Brittingham (NCDENR-DCM).

The award winning programs are also featured in roundtable sessions at NADO's Annual Training Conference. The roundtables give economic and community development professionals and elected officials the opportunity to share with colleagues detailed information about successful strategies for building communities and creating jobs. NCDOT will be presented with this national recognition at a special awards ceremony in September.

The Interagency team members at the conclusion of the week long Environmental Permitting Improvement Process Workshop in May 2001.

GREAT NEWS!

July 2003 Letting

The Department of Transportation LET an amazing $276,314,149 for the month of July. This is the first time since 1998 when the Department starting tracking the information electronically that there were no project delays. There was a lot of hard work and coordination within the NCDOT and with the environmental regulatory agencies. Thanks to everyone that had a part in this great success!!

TIP No.	ONE Specialist	Hydraulic Engineer	DWQ Contact	Corp Contact	Estimate
B-3462	Haney	Hunt	John Hennessy	Steve Lund	$1,350,000
B-3600	Haney	Morgan	John Hennessy	John Thomas	$525,000
B-3603	Haney	Lockler	John Hennessy	John Thomas	$925,000
B-3633	Montague	Morgan	John Hennessy	Richard Spencer	$725,000
R-1030D	Beauregard	Duffield	John Hennessy	Mike Bell	$22,700,000
R-2000F	Gordon	Twisdale	John Hennessy	Eric Alsemeyer	$42,300,000
R-2000G	Gordon	Twisdale	John Hennessy	Eric Alsemeyer	$41,400,000
R-2231A	Gordon	Cail	John Hennessy	Richard Spencer	$27,500,000
R-2231B	Gordon	Cail	John Hennessy	Richard Spencer	$34,600,000
R-2231CA	Gordon	Cail	John Hennessy	Richard Spencer	$31,600,000
R-2231CB	Gordon	Cail	John Hennessy	Richard Spencer	$19,000,000
R-2704	Feulner	Lindsey	Cynthia Van der Wiele	John Thomas	$775,000
R-4031	Montague		No Permits required (guardrail project)		$1,750,000
U-2107D	Haney	Clawson	John Hennessy	Dave Timpy	$22,300,000
U-2307AE	Riddick	Cail	Cynthia Van der Wiele	John Hendrix	$12,100,000
U-2827C	Feulner	Snead	Cynthia Van der Wiele	Eric Alsemeyer	$9,100,000
U-3329	Montague		John Hennessy	Eric Alsemeyer	$5,100,000
U-4440A/B	Manley		municipal agreement with Charlotte		$2,564,149
Total					**$276,314,149**

Procedures for Small Projects

By: Heather W. Montague
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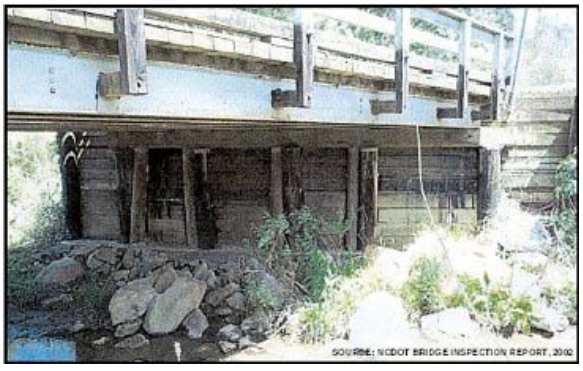
Transportation projects can vary greatly in size and complexity, depending upon the scope and location. In North Carolina this is especially true with the vast array of human and natural resources which exist statewide. As biologists for the NCDOT Natural Environment Project Management Unit, the procedures for environmental assessment and permit acquisition are consistent regardless of the project size. Only slight differences arise when smaller projects allow for a scaled down approach to this process. Most bridge replacement projects and some road widenings fit into the "small project" category.



The process which dictates our procedures for each and every project includes but is not limited to addressing the following types of questions:

What activity does the project involve? Where is the project located? Are there any river basin or watershed rules governing the project area? What protected species are listed for the county in which the project is located? Is habitat present for a given species and have surveys been completed? Are there any streams or wetlands within the project limits? If so, have they been delineated and have they been verified? Are any of these resources likely to be impacted by the project as proposed? Can those probable impacts be avoided or minimized? What types and amounts of mitigation will be required? Are there any recommendations that can be made which may preserve and enhance the natural resources within the project area? Which permits will be required to construct the proposed project?

Managing Endangered Plants on NCDOT's Right of Way

By: Mary Frazer, Environmental Specialist
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Plants and animals on the Federal list of Threatened and Endangered species pose a challenge to departments of transportation across the country. They pose a special challenge when they occur on property directly owned and managed by that department. The North Carolina Department of Transportation provides a home on its right-of-way to at least eleven species of federally protected plants, in nearly a hundred locations (Table 1). This includes nearly 80% of the population of Schweintiz's sunflower found in the state, a majority of the global population of that species.

Most of these species prefer open habitat, and some periodic disturbance is required to keep these habitats open. This explains why so many of the plants have survived on highway right-of-way, but have disappeared in other areas of potentially suitable habitat that were not kept open. The roadside populations provide important information on species habitat preferences, and can help determine where restoration efforts should be focused. They also serve an important nursery site to maintain genetic diversity and provide transplant material to future protected sites. In fact, eight populations have been moved from their roadside location.

NCDOT started formal inventory and management efforts on these populations in 1987. Working cooperatively with the N.C. Natural Heritage Program, NCDOT developed a strategy of signing and mowing these populations to protect the plant from inappropriate disturbance while maintaining the preferred open habitat. Mowing should only be conducted only during the dormant season (November 16-March 31). Herbicide use should also be avoided.

Management of species along the roadway does have its pitfalls. Despite "Do Not Mow" and "Do Not Disturb" signs, 40% of these sites have been impacted at least once in the last 12 years by mowing in the growing season, herbicide spraying, grading, or other activities. Six populations have also disappeared, perhaps due to the lack of mowing at appropriate intervals. NCDOT is working to improve signage, educate maintenance workers, revise mowing contracts so that mowing occurs at the appropriate time, and limiting driveway access though protected plant populations.

Table 1

Species	# of Sites	Prefered Habitat
Rough-leaf loosestrife	2	Ecotones between longleaf pine upland and pond pine pocosins
Cooley's meadowrue	2	Moist to wet open bogs and savannas
Sensitive joint vetch	1	Tidal marshes and wet ditches
Smooth coneflower	2	Prairie remnant, open woods roadsides, clearcuts
Michaux's sumac	6	Sandy or rocky open woods
Fraser's loosestrife	3-4	Forests, roadsides
White irisette	1	Thin woods in the escarpment region
Zephyranthes	1	Roadsides, calcareous coastal fringe forest
Virginia spiraea	7	Riverbanks
Schweinitz's sunflower	>63	Prairie remnants, roadsides, woodland edges, power lines

Going for the "A"

By: Mason Herndon, Division 3 Environmental Officer
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DEO Perspective: Featuring an article from a Division Environmental Officer. This quarter's segment is brought to us by Division 3, located in the coastal region of the state.

In a recent meeting I attended, Len Sanderson stated that "Compliance is not a goal, it is a requirement." Make the requirement or you fail as an environmental steward. In many cases when organizations have to pass a requirement they do the minimum to squeak by. If you want to be a leader you can not settle for a "C" just so you can pass the requirement; you have to go for the "A". In Division 3 we often try to find ways, not only to ensure that all of our projects are compliant, but make an extra effort to find ways to make the projects more environmentally friendly, visually appealing and safer than required. It is this kind of extra effort that can go a long way in building a trustful relationship with the regulatory and environmental agencies as well as promoting NCDOT as an environmental leader.

One small extra effort that we have made in the Division is on our bridge replacement projects. In years past, when a bridge was replaced with a slightly longer bridge, in many cases the new riprap to protect the end bents would extend out to the old toe of slope. Now, it is the general practice to pull that toe of slope in to create a larger floodplain under the bridge. This creates a safer situation in two ways: A larger flood area is created under the bridge, which may reduce flooding of the roadway during high flows and during normal flows we have created an area that is being utilized as a wildlife crossing.

Another technique that has been utilized more often within the Division is the use of headwalls and biodegradable erosion control matting. As any erosion control engineer will tell you, nothing is better than a good stand of vegetation to prevent erosion and sedimentation. On several projects, erosion control matting has been used to establish vegetation in place of riprap with great success. Biodegradable matting with a short life span of three to six months is used because it reduces the chances of any animals being caught in the matting and it usually decomposes before mowing is required. If soil material is unsuitable for a quality stand of vegetation, shoulder cut material is hauled in from the waste yard and utilized at these sites. Furthermore, in areas where flows do not necessitate headwalls, headwalls are being utilized to stabilize the shoulders where steep slopes are encountered due to pipe lengths being restricted by ROW constraints. These techniques were used on a pavement-widening project on River Road that included a bike lane through a sensitive area in New Hanover County adjacent to the Cape Fear River. Almost complete, the project will have stable vegetated slopes, be visually appealing and safer for cyclist due to the absence of riprap adjacent to the travel lanes.

Recently the Division had another project that required some extra effort and creativity. The project involved the repair of deteriorating steel "H" piles, in waters up to 34 feet in depth, at Bridge 61 in Brunswick County on NC 133. The prompt action request was to reinforce twelve piles with concrete collars. To prevent the discharge of "green concrete", several techniques have been built upon by the Division. Special fiberglass collars were placed around the deteriorated "H" piles

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(Going for an "A" continued from page 6)

and then forced into the substrate. Sandbags were placed around the base of the collars, if needed, to reinforce the collar's base to prevent leakage at this critical point. This technique had been used successfully in the past; however, the concern has been handling the concrete slurry and wastewater that would rise to the top of the collars. To reduce the amount of wastewater and concrete slurry, Bridge Maintenance had a liquid anti-washout admixture added to the concrete. This additive reduces washout of sediment and fines (reduces slurry waste). To handle the remaining wastewater, Bridge Maintenance constructed a large settling basin (12 ft x 12 ft) on the adjacent upland area with sandbags and silt fence. As concrete was introduced into the collars, the wastewater and slurry that was displaced, was pumped into the settling basin with a diaphragm trash pump. Bridge Maintenance personnel has also constructed pans, similar to those utilized in drill shaft operations in place of outer casings, to collect excess concrete that may overflow from the top of the collars. These techniques developed by the Division which are labor intensive and costly, have made this type of work more compliant and environmentally friendly than ever before.

To be an environmental steward and "to do the right thing" does require creativity, hard work and sometimes a few more dollars. Division 3 and NCDOT have made excellent progress in constructing projects that comply with environmental regulations. However, to be an environmental leader, we need to resist complacency and always seek ways to improve on how we conduct our business and go for the "A" on every project, big or small.

(Viewpoint continued from page 2)

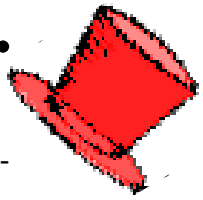
leader and key person in the implementation of several of these programs. Coming from the regulatory community, Greg's experiences have added a unique perspective in achieving the Departments environmental goals.

With the natural environmental initiatives in place and the support and leadership from top management in the NCDOT, the Department continues to raise the "environmental bar" for other southeastern states. The Departments goal of being stewards of the environment while providing a transportation program that meets the needs of North Carolinas' traveling public, is being realized. And leading the charge in this effort with pleasure and with pride, is the Office of Natural Environment.

DETOUR

Can you match the Scientific Plant Name with the Common Plant Name?

Amaranthus Pumilus	Dwarf-flowered heartleaf
Carex Lutea	White Irisette
Helianthus Schweinitizii	Seabeach amaranth
Hexastylis naniflora	Rough-leaved loosestrife
Lysimachia asperulaefolia	Schweintiz's Sunflower
Oxypolis canbyi	Blue Ridge Goldenrod
Sarraceia oregophila	Golden Sedge
Sisyrinchium dichotomum	Mountain golden heather
Dolidago spitamaea	Candby's dropwort



Hats Off to Gordon Cashin

Congratulations Gordon! He has been accepted in the Masters of Business Administration Program at UNC-Chapel Hill. Gordon is an Regulatory Affairs/Liaisons Coordinator in the Natural Environment Project Management Unit.

Hats off to Mary Frazer

Congratulations Mary! She was highlighted in the Spring 2003 *Plant Conservation* newsletter. Mary, Natural Systems Specialist in the Natural Environment Biological Surveys Unit, was noticed in the newsletter for working with the North Carolina Botanical Garden to rescue roughleaf yellow loosestrife from property slated for a new road.

Hats Off to Hal Bain and Phillip Todd

Congratulations Hal and Phillip. On June 20, 2003 they both were awarded a certificate by the Natural Resources Leadership Institute for successfully completing the training and the practicum project and for advancing the principles of collabrovative problem solving.

Hats Off to Christie Murphy

Congratulations are also extended to Christie for participating in the Franklin County Relay for Life. With the help of her co-workers she was able to contribute $150 for her walk.

Project Spotlight: Sawmill Mitigation Site, Craven County

By: Beth Smyre and Jamie Lancaster, Natural Environment Engineering Unit
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Construction of the impressive US 17 Neuse River Bridge in New Bern, as well as other projects within the coastal plain Neuse River Basin, facilitated the need for wetland mitigation projects in that region. Two constructed wetlands currently serve as mitigation for the US 17 bridge and are located adjacent to the bridge alignment. The first site, Lengyel, was completed in 1999 and has shown jurisdictional success in its first four years of post-construction monitoring. Construction of the second site, Sawmill, was recently completed in early 2003 and serves as an excellent example of the cooperation between the O.N.E. mitigation staff and operations personnel.

Sawmill Mitigation Site, post-construction. The ramp in the background is part of the Neuse River Bridge.

The Sawmill Mitigation Site consists of the creation, restoration, and preservation of a brackish tidal marsh as well as the creation of a tidal cypress-gum swamp. Located along the north bank of Scotts Creek, the site provides approximately 0.78 acres of brackish tidal marsh and 2.4 acres of tidal cypress-gum swamp. A stretch of land between the site and the bank of Scotts Creek was determined to be jurisdictional wetlands and is included in the project as a preservation area. In previous decades, the site had been used in a saw mill operation (hence the site's name) and included supporting roads, buildings, storage areas, and large sawdust piles. Though the saw mill operation ended by the late 1980's, sawdust piles still remained on the site and would later become an issue during site construction.

In order to allow future TIP projects to remain on schedule, the Sawmill site had to be constructed in a timely fashion. This was accomplished by the coordination efforts of PD&EA staff, Roadway Design, Roadside Environmental, and Division 2 Operations personnel. The Roadway Design Unit completed the site's design quickly, which allowed site construction to begin as soon as possible. The site was constructed by grading the restored area to match the elevations of reference wetlands located both on- and off-site. Approximately 18,000 cubic yards of material were removed in order to meet the target elevations. Once the grading was complete, the division's Roadside Environmental Unit coordinated planting activities with their statewide planting contractor, and the site was planted with both tree and marsh grass species. As there were very few problems associated with the construction, all grading and planting activities were completed in a total of three months.

However, NCDOT involvement does not end with the construction of the site. The site must be monitored for a minimum of five years in order to determine if the plants are surviving and if the site is receiving adequate hydrologic input. In order to determine if the site is "successful," both water levels and tree survival data will be compared to the same data collected at the two reference wetlands. If the data from the constructed site is within a reasonable variation of that collected in the reference areas, then the site is deemed successful for that monitoring year. The Mitigation Monitoring Team chose to highlight this project because of the cooperation received from several units within NCDOT. Ken Mason, Craven County Maintenance Engineer, and his staff did a great job during construction to ensure that the expectations of the site were met. Roadside Environmental personnel expedited planting activities so that the site could be completed as quickly as possible. PD&EA would like to commend the effort put forth by each of these units to get this site completed in a timely manner. It is hoped that this work will result in a successful mitigation site that will benefit the local environment for years to come.

(Lyme Disease continued from page 1)

Early symptoms of this disease include fever, headache, fatigue, pronounced achy joints, etc. The rash and symptoms may show up as little as a few weeks after a tick bite. Left untreated, Lyme Disease can cause neurological and cardiac symptoms. After a couple of years, severe arthritic problems can occur accompanied by painful, swollen joints. Treatment for Lyme Disease involves antibiotics taken over the course of several weeks (or several months – depending on the physician). If caught in the first couple of months, Lyme Disease is easily treated and physicians generally treat patients that display the symptoms with antibiotics since it is better to be safe than sorry. In severe cases, chronic fatigue, painful joints and numbness in extremities are debilitating.

A vaccine for prevention of Lyme disease was formerly available, which came with numerous warnings and disclaimers that accompany many vaccines. However, this commercially available vaccine was discontinued as of February 25, 2002 according to the manufacturer of the vaccine (LYMErix).

To avoid Lyme disease (and other tick diseases), avoid areas infested with ticks, such as moist, shady areas (HA- this is impossible for field biologists or outdoor enthusiasts). If you spend time in the field, tuck pants legs into socks (or use Duct tape!). Using repellent with DEET is recommended and wearing light-colored clothing makes ticks more visible.

The minimum attachment time for ticks to transmit Lyme disease has not been determined and varies in literature. The CDC reports that *Ixodes* ticks that are attached for more than 2 days are more likely to transmit diseases. Other literature indicated a much shorter time period (6-24 hours) for attached ticks to transmit Lyme disease.

Numerous web sites are available covering every aspect of Lyme disease. Graphic pictures are available if you think you have the rash and want to view photographs of *Erythema migrans.* Pay attention to symptoms of Lyme disease as the typical rash may not always be prevalent. It is also important for staff to note in their calendars when they were bitten by ticks so if they come down with Lyme disease (or Rocky Mountain spotted fever) they can then document it for workman's compensation to help pay for treatment.

Goodbye April Helms and Ashley Oliver!

April and Ashley, valued members of the Office Natural of Environment resigned to pursue work with private consultant firms. We wish you both the very best and we will miss you!

Promoting the Office of Natural Environment: A New Exhibit

By: Beth Smyre, Natural Environment Engineer,
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In order to promote the environmental and conservation work of the unit, a permanent exhibit was recently developed to be used at conferences attended by the O.N.E. staff. The display highlights the work of both the natural resources survey staff as well as the wetland mitigation teams. Included in the exhibit are featured mitigation and species survey projects as well as explanations of the work of each team within ONE. Following its development, the ONE exhibit has been utilized at several recent conferences.

In April 2003, the North Carolina Department of Environment and Natural Resources sponsored a two-day conference as part of its One North Carolina Naturally initiative. The purpose of this initiative is to build a comprehensive statewide conservation plan and to promote cooperation between landowners, government agencies, private organizations, environmentalists, and other interested parties. Held in Raleigh, the "Partnerships in Conservation" conference was designed to solicit statewide participation in efforts to conserve the state's natural resources. Included within the conference was an exhibitors symposium in which approximately 100 exhibitors were given the opportunity to present their work. Several units within NCDOT were represented and gave visitors the chance to view the conservation efforts of the Department.

The following month, the O.N.E. also participated in the Southern Environmental Leadership Summit (SELS). Sponsored by NCDOT, SELS was designed to focus on what agencies needed to create the cultural change that would promote environmental stewardship within transportation projects. Transportation departments from several states were represented at the conference.

The O.N.E. exhibit is designed as a public relations tool to increase interest in the environmental work of NCDOT. This exhibit will continue to be used at upcoming conferences, so please visit it and learn about the O.N.E.!

April Helms, Ashley Oliver, Transportation Secretary Lyndo Tippett, Jim Hauser, and Beth Smyre at the One North Carolina Naturally Partnerships in Conservation Conference. (Photo courtesy of John Sharp, NCDOT).

Ecosystem Enhancement Program (EEP)
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A pathway for transportation and the environment

The beginning of any new program starts with the first step. The Ecosystem Enhancement Program (EEP) took its first step around noon, on a Friday in the fall of 2001. After a week-long mitigation workshop that was framed to improve transportation project delivery while improving the environment, a proposal to create the EEP was made to the DENR Chief-Deputy Secretary of the Department of Environment and Natural Resources, the Deputy Secretary of Planning and Environment for the Department of Transportation and the Commander of the U.S. Army Corps of Engineers. This was a bold proposal that would require extensive coordination and a willingness to change the way mitigation is addressed. The sponsors enthusiastically endorsed the proposal.

The fall workshop included participants from USACE, NCDWQ, NCDCM, NCWRP, USFWS, USEPA, NC Marine Fisheries, NCWRC and staff from within the NCDOT Office of the Natural Environment. The facilitators walked the consortium through expectations, a gap analysis, ground rules and an outline of actions to be undertaken. Of all the activities, it was the "gap" analysis that opened my eyes. The analysis was directed toward North Carolina's present methods of providing mitigation through DOT mitigation staff, Wetland Restoration Program staff and private banking. The agencies revealed that they were concerned about lost functions, just-in-time (or after-time) mitigation, quality, temporal loss and postage stamp mitigation. The analysis led to a concept of utilizing the best abilities of all mitigation providers in the State. The planning, implementation and coordination would be provided under a single entity, EEP. This force would provide mitigation years in advance of project impact through a programmatic mitigation initiative. The foundation would be anchored on a strong planning process.

We now stand ready to step into this new program. The development of a Memorandum of Agreement, organizational structure, and operating protocols were guided by the leadership of project sponsors, change management specialists and a coordination group that consisted of staff from USACE, NCDENR and NCDOT. These individuals developed business, staffing, and operational plans that would meet the program objectives.

Here are the key activities underway:

- USACE, NCDENR, NCDOT Memorandum of Agreement (MOA). This document was posted on public notice in April of 2003. The official comment period has expired and the Corps of Engineers is addressing all comments. The MOA will provide the basis for processing Section 404 and related permits. It is anticipated that this document will be formally signed this summer.
- Policy Process and Procedure Manual and associated training. The Federal Highway Administration assisted in providing augmenting funds to hire a consultant to assist in development of an EEP statewide policy and procedure manual. The program will take place over the next nine months and produce a formal document that compiles rules, regulations, policy and processes that the EEP will follow. This living document will be web-enabled and accessible by all.
- Process improvement teams to include Watershed Needs and Functional Assessment Teams. The Watershed Needs Assessment team is developing a process to assess watershed health, future watershed impacts, areas of need and types of projects that can be implemented that will satisfy regulatory demands and plot a course for watershed recovery. Functional Assessment teams are looking into anticipated impacts to wetland and streams and developing tools to quantify those losses in discrete units of acres and feet as well as functional losses. Functional Assessment teams will be developing tools to assess impacts based on GIS data for longer term programming as well as short-term processes to identify actual field verified losses.
- Project Implementation Teams (PITs). North Carolina Department of Transportation and NC Department of Environment and Natural Resources Staff within the Wetland Restoration Program have combined forces to target key restoration projects that will be required for the next two years. This partnership is the first leg of combining the two staffs into the Ecosystem Enhancement Program. The PITs restoration projects that are under development will meet the requirement of the MOA for the next two years.
- Preservation Initiative. This is a new undertaking by EEP Transition staffs who were assembled to develop strategies and tactics to meet MOA requirements. The Staff are coordinating with the Natural Heritage Program in an effort to supplement the mitigation that is underway by the Project Implementation Teams. The preservation program will provide valuable, high quality mitigation that will help protect our investment for the future well being of our natural systems.
- Private Mitigation Providers. The EEP will focus its attention on planning and quality control. It will continue to rely on the private sector to design and construct the mitigation projects. We will continue to use the consulting industry and the private mitigation providers to deliver quality mitigation in a timely fashion.
- Organization/Structure. The Secretaries of DENR and DOT along with management have developed a plan to combine mitigation staff within the two agencies. The specifics of the plan are in refinement and there are provisions for new staff to augment ongoing activities and move us into the future. Construction will soon begin on providing space and logistics for the operation.

In closing, EEP will begin gestation this summer. We are planning on the metamorphosis to occur over a two-year period. When this "butterfly" emerges, North Carolina will be "winging" its was toward a better environment for us all. This is an exciting time.

Chris Rivenbark

Chris Rivenbark is a Mitigation Implementation Specialist with the Office of Natural Environment. Chris is from Wallace, North Carolina. He received a Bachelor of Science degree in Natural Resources-Ecosystem Assessment with a minor in Environmental Science from N.C. State University in 1998. He began working with NCDOT in 1997 as a temporary in the Planning and Environmental Branch. While in the Natural Resources Section, he prepared Natural Resources Technical Reports, conducted wetland delineations, and endangered species surveys. After an Environmental Unit reorganization, Chris' additional duties included permit acquisitions and working with wetland/stream mitigation sites. In 2002, after a reorganization within the Office of Natural Environment, he was given the opportunity to focus on wetland and stream projects for the Department in the Mitigation Implementation Section. Chris' responsibilities often involve working with technical applications such as GIS, GPS, and CADD software.

Chris and his wife, Melissa live in Raleigh and will soon be celebrating their third anniversary. Chris spends spare time working in the yard and on projects around the house. He is a volunteer with the Wake New Hope Fire Department. During the summer, he and Melissa enjoy relaxing on the Chowan River while visiting relatives in Edenton.

Mary Frazer

Mary Frazer is a Natural Systems Specialist with the Office of Natural Environment. Mary is in the Natural Environment Biological Surveys Unit under Hal Bain's Supervision. She has been with the department since August 2000. Mary has a BS degree in Zoology from the University of Wisconsin and a Master of Environmental Management in Resource Ecology from Duke University.

Before joining NCDOT she worked with the Soil and Environmental Consultants, Wisconsin Coastal Management Program, and as a Water Regulation Specialist with Wisconsin Department of Natural Resources. Mary's areas of expertise are the Section 7 field investigations, NEPA documentation, and wetland and aquatic investigations.

Mary resides in Raleigh with her cat, Hillary. For the last several months she has been fostering a 100 lb Wolf hybrid. His nickname is Snowflake. Her hobbies include ultimate Frisbee and kayaking.

Recent Staff Additions

The Office of Natural Environment would like to welcome it's new employees.

"Eric Adrignola"
Natural Environment
Project Management

"Chris Underwood"
Natural Environment
Project Management

"Chris Manley"
Natural Environment
Project Management

"Ann Burroughs"
Natural Environment
Biological Surveys

"Heather Heinz"
Natural Environment Mitigation Implementation

Detour Answer: Amaranthus Pumilus-Seabeach amaranth, Carex Lutea—Golden Sedge, Helianthus Schweinitizii—Schweintiz's Sunflower, Hexastylis naniflora—Dwarf-flowered heartleaf, Hudsonia montana—Mountain golden heather, Lysimachia a sperulaefolia—Rough-leaved loosestrife, Oxypolis canbyi—Canby's dropwort, Sarraceia oreophila—Green pitcher-plant, Sisyrinchium dichotomum—White Irisette, Dolidago spitamaea—Blue Ridge Goldenrod

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Our Mission Statement

Each of the teams in the Office of Natural Environment is responsible for natural resource investigations, obtaining environmental permits, developing wetland and stream mitigation plans, and implementing the construction of mitigation sites.

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